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HEALTH.

ADDRESS

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THE SOCIAL SCIENCE CONGRESS

AT PLYMOUTH,

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22 JUN 1965
AND TROPICAL MEDICINE

BY

HENRY W. ACLAND, F.R.S.

REGIUS PROFESSOR OF MEDICINE IN THE UNIVERSITY OF OXFORD;
HON. D.C.L. CAMBRIDGE, EDINBURGH, AND DURHAM; HON. M.D. DUBLIN;
HON. PHYSICIAN TO H.R.H. THE PRINCE OF WALES;
AND PRESIDENT OF THE HEALTH DEPARTMENT AT THE CONGRESS.

Oxford and London:
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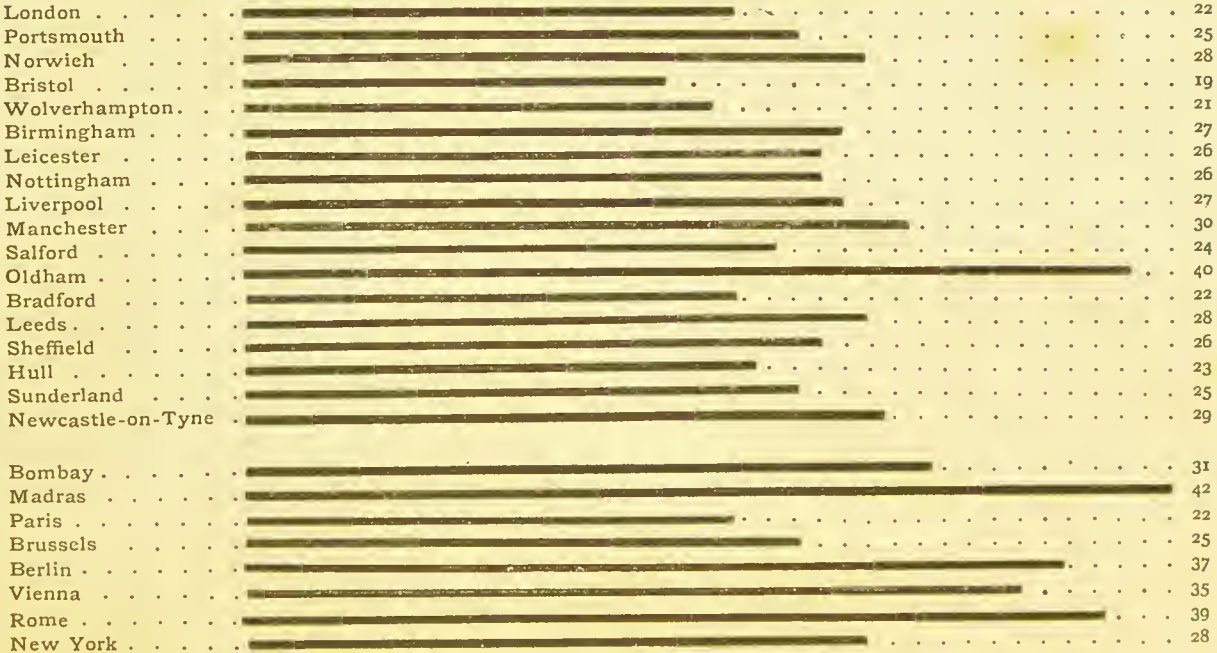
1873.

HEALTH.

Diagram to shew the Proportion of Deaths per 1,000 per Annum as recorded in the Reports of the Registrar-General, on October 25, 1872.—(See p. 41.)



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TO THE

LORD NAPIER AND ETTRICK,

ONE OF THE BAND OF GREAT BRITISH ADMINISTRATORS,

President

OF THE SOCIAL SCIENCE ASSOCIATION,

TO THE COUNCIL AND MEMBERS OF THE ASSOCIATION,

THESE PAGES ARE RESPECTFULLY DEDICATED.

PREFACE.

THE following pages are the substance of an Address delivered at the Social Science Congress this year. I have thought it better to retain its form as an unwritten speech. I should not have attempted, even with the help of the Reporter's notes, to commit it to paper, unless it had been required for the Transactions of the Congress. This being so, it has seemed that it might be suggestive to others besides the hearers on that occasion.

The object of the Address was, when spoken, and is now, to present to some who are for the first time acting in sanitary work, a few examples which would give a general idea of a great subject, one which has in the last few years been almost created by Biologists and Statisticians.

In taking from India one of the illustra-

tions of the temper of mind in which the elements of Comparative National Health should be studied, I may seem to a few to be forgetful of what has been done at home. This, with one who is personally grateful to Sidney Herbert, Florence Nightingale, Chadwick, Farr, Simon, Stokes, Christison, Rumsey, Rawlinson, Galton, Sutherland, Parkes, and many other teachers and friends, is not possible. But I look on Indian sanitary work as one with our own, and invaluable as affording a means of comparison among various races. I hope the day will soon come when this is so far understood, that an interchange of duties may take place between British and Indian Sanitary Officers. This need not be more difficult, when we have a regular sanitary service, than it is with the Army, the Diplomatic Service, and the Law. Benefit would accrue to both branches of the public service. I do not certainly presume to say that the great Sanitary Engineers, or Medical Health Officers, either of India or England, have to teach one another; but I do believe that the assistants of Rawlinson, Simon, Gairdner, or Trench,

might find it well worth a three weeks' pleasant voyage to go and serve a while under Clark, Cunningham, Hewlett, or Townshend ; and so with the pupils of the latter conversely.

It is scarcely possible to make any statement on the selected illustration of Cholera without provoking controversy. But it will be borne in mind that my object is neither criticism nor history, but to make such observations and quotations as will shew the magnitude of the health question, in its social and its scientific aspects, together with the labours which have been, and are being, bestowed by England on the solution of health problems both in the West and East. No one concerned with Sanitary progress can have seen much of popular assemblies, or read much popular literature, without amazement at the limited range of some speakers and writers on the subject, and the often limited knowledge within that range. But all this will be changed in a very few years ; and meanwhile any humble attempt to aid voters to vote intelligently on this or on any other momentous question, is not unworthy in its aim. I cannot

here avoid special reference to the publications of the Army Sanitary Commission[a], and the "Abstracts of Indian Sanitary Reports made in the India Office, by Mr. Charles Plowden[b]." They will open, to many, a vista of consecutive and well-directed labour on a great scale.

Though this is not the place to enlarge on the great characters which India has formed, yet we do not perhaps fully know how much of experience and of science India may give back to our little western island, in this department as in others, derived alike from our British and our native fellow-subjects. It would indeed be presumptuous in me to express the admiration I feel for some papers on social and sanitary matters by native writers.

Since this address was delivered, the Local Government Board has firmly proceeded on its way. Quietly and rapidly the hope of the Sanitary Commission is being realized,—that there shall be in England no area without an authority for *all* Public Health purposes, nor

[a] To be obtained of Harrison and Son.

[b] To be obtained through Eyre and Spottiswoode.

anywhere more than one; that every authority shall, for these purposes, have within reach the aid of the highest scientific experts in the various departments of knowledge that bear upon National Health; and that every area shall be devised in the way that combined local experience and central supervision shall shew to be the best.

After all, though the Central Sanitary machinery is so complex, and its duties and cares at once minute and comprehensive almost as the framework of Society, yet for individuals, as has been repeatedly said in one form and another, the personal health code is summed up in two words, Cleanliness and Godliness. English people neither need nor will endure petty interference in their homes.

I have had no opportunity of entering upon the question of cost to the country, of public Sanitary work; but the reader will observe that I have expressed a hope that the question of Local Taxation will take precedence of further Sanitary Legislation for this one year. I may briefly, therefore, state, in conclusion, my con-

viction, 1st. That any Sanitary administration which does not pay scrupulous regard to its expenditure, would in the end fail, as well as be unjust: and 2nd. That upon the whole, looking at the history of armies and populations, we cannot avoid the conclusion, that if such expenditure and such care be wisely conducted, it becomes actually a source of economy to the ratepayer, when thoroughly, and therefore not parsimoniously, executed.

Various details bearing on this Address were discussed by me last year[c], and are not therefore alluded to here.

I cannot conclude without an expression of the deep obligations I am under to Sir Bartle Frere, who, being President of the Sanitary Committee of the Council of India, has been untiring in his assistance towards a full apprehension of the subject of these pages.

[c] "National Health." Second Edition. James Parker and Co., Oxford and London, 1871.

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HEALTH.

THE Public Health Acts of the last two Sessions appear to guarantee an essential change in the physical condition of the people of this country. In 1871, for the first time in the history of England, a chief central office of State was formed for the combined supervision of the health and of the destitution of a steadily-increasing population. In the following Session of 1872, just brought to a close, a further and equally important step was taken—that of practically committing to the local self-government of the people the detailed charge and management of their own health ; they being, however, required to appoint a Medical Officer of Health for every spot in the land. So, at least, I interpret the significance of the two Public Health Acts which have just been passed in these years of 1871 and 1872. If such be the condition of affairs as regards the public health, a new era is inaugurated; and there seems to be to-day a proper opportunity for calmly asking ourselves, what is the fundamental idea of health, as it is entertained by those who have done

their best to master that idea? and what are the circumstances of this country in respect of that idea? Experts, many of whom I see present, will understand that, to do this completely in an hour is just as possible as it would be to paint a complete picture in that space of time; yet a picture may quickly be blocked out with advantage, though detail be omitted; and such a rude sketch I endeavour to present to you.

I.—Idea of Health.

First, then. Health itself has to be considered in its fundamental conception. That is a simple matter enough. There is for every living being a *Personal Health;* and it is either good or bad. Every living being, originally a particle derived from a more or less similar being, is composed of few out of many ingredients which make up our planet, is arranged in a certain manner, and performs certain functions ill or well; if well, we say the individual is healthy, according to his age and inheritance; if ill, we call it unhealthy.

There is for every civilized country a *Public Health,* which is not either the health of the individual nor the health of the nation, but deals with the circumstances which affect individuals, taken as they are in relation to each other, as

members of the body politic. For example—the question whether a man has been poisoned inadvertently or of malice prepense is a question of public health, sanitary police, and medical jurisprudence, without regard to the general health of the nation.

There is for every nation a *National Health*, which includes a much more complex idea. It includes not only the circumstances which affect the individual, but those which affect the nation as a body, such as race, religion, customs, laws.

There is for the human race a science of *Comparative National Health*, which has reference to that health which affects, and is affected by, the circumstances of the whole world, which seeks to compare one nation with another, to ask why one people is more, one less healthy; one more, one less long lived; which aims at presenting to the mind a correct conception of the circumstances and the fluctuations in the health of the whole of mankind.

The object of sanitary legislation in any civilized country is to influence the health of its people in each of these four aspects respectively,—to influence the health of individuals, to regulate the circumstances of purely public health, to develope the physique of the

nation, and to note, for a purely scientific purpose, the health of the human race throughout the globe. Doubtless these are ideas which some may think cannot be safely handed over for their practical expression to the tender mercies of common councillors and boards of guardians.

Nevertheless, before we allow this fear to be just, we must be sure that we have ourselves correct notions as to what is, and what is not, essential for the several kinds of health as I have endeavoured to pourtray them.

The essentials are, after all, very simple. In the first class, Air, Water, Food; which some would scientifically sum up in one term —Food. But for civilized communities there is a second class as essential—Clothing, Fire, and Habitations. To the happy savage,—and to some extent, I own I believe in the happiness of one who, living in peace in some ideal island, diving off a pleasant shore, basking in a radiant sun, has neither the charms nor the cares that literature would bring to his palm-tree —for him, if such there be, this class of provision is not essential.

Nor does the third class of complex essentials, though absolutely necessary for civilized life, touch him. Regulated Highways of safe

and good communication; regulated Scavenging, or means of pure life; Laws of Police, or an assured Justice, as between man and his fellow, in all the transactions of life.

These nine essentials, however, of national health—Air, Water, Food, Fuel, Clothing, Habitations, Highways, Scavenging, Police, may be safely accounted futile in a modern civilized people, without that which is fundamental to all, a general though wise Education; an education leading to the development of the sense of good citizenship in an intellectual and religious being.

II.—Typical Provisions for Health.

All this being so, we ask ourselves, how are these conditions to be obtained? What steps has modern civilization taken to obtain them? The answer is far too long for a brief hour, but your memories will supply the want of detail while I give one general illustration.

There happens to be a class of habitations where we can especially study the necessary conditions of health. If you go to a modern hospital you certainly ought to find nothing about it but that which is typical of the best health conditions. If you do, it implies in the managers deficient knowledge or faulty admi-

nistration. What, then, is the idea of a modern hospital? When you mention a hospital to an expert in sanitary matters, he immediately recalls what is termed a "hospital unit." Now, I take leave to say that modern physicians and surgeons do not think they rightly treat the sick, unless they put them in at least as healthy circumstances as they would wish them to be in when well. The idea that there is abstract advantage to masses of sick persons in collecting as many as possible into one place for the purpose of treatment, has now passed away. A good hospital is a first-class illustration of the science of preventive medicine. The things most necessary for health, as well as for the treatment of disease, are to be seen there. Every essential is provided in the cheapest manner, on the plan most approved by modern science and experience. Although there is a typical size of unit, which on the whole is better than all other sizes, yet any number of persons may be accommodated, just as we can have a large palace as healthily arranged as a small house, or a barrack as a guard-room. For this unit may be arranged under a great variety of circumstances in its relation to other units. A skilful architect will say, "Give me the plan of your site; tell me your latitude, and your

maximum and minimum temperature; and with these I will arrange for a hundred, a thousand, or two thousand patients." I do not say that the plan of having 2,000 sick in a hospital is the best, any more than we should say, that great towns offer the best conditions of human residence; yet civilization has to deal with masses, both of the sick and of the healthy, and it must apply to masses the principle of health which applies to individuals. Accordingly, the hospital units are grouped in various ways; are connected or unconnected; are placed parallel in line, are planted in echelon, arranged in three sides of a parallelogram, like the *Lariboisière;* on either side of a corridor, as at Blackburn; on one side, as at Malta, and as in the great hospital of St. Thomas', in London. The principle reached its maximum development in the great emergency of the American war, where, to pass by minor instances, the famous Chestnut Hill Hospital had 50 pavilions or units, each 175 feet in length, 2,800 beds for patients, 500 for officers, a corridor 2,400 feet long, a railroad connected with each pavilion, complete sewerage, water supply of 150,000 gallons daily, and a magnetic telegraph connecting every ward with the office of the surgeon-in-chief. All this impro-

vised for a temporary emergency proves, I think, how principles, clear and unmistakable for house and hospital arrangements, are now accepted by those who are willing and able to keep up with the knowledge of the day [a].

Now, if each important part of the largest hospital is carefully constructed and properly administered, speaking generally, it ought to be as perfect as a whole, as in the constituent parts; and is so, unless the collection of the sick into masses actually superadds, by cumulation, a new element of danger and disease. But, at all events, the principle of a perfect unit is equally applicable to the hospital of a village, of a town, a county, or an army, separate or united, according to circumstances and convenience.

It is the same with the abodes of the healthy. If you find in a hospital, great or small, a drain within the walls, a sink connected directly with a drain, an unventilated closet, you know the hospital is under incompetent management. If you find in a village, a town, a city, or in any

[a] *See* "Treatise on Hygiene, with Special Reference to the Military," by William Hammond, M.D., Surgeon-General, United States Army, and the excellent little volume on "Construction of Hospitals," by Captain Galton, F.R.S., and generally, "Parkes on Hygiene."

house similar faults of construction, you know you have to do with faulty organization, or with inadequate law, incompetent advisers, or careless people.

III.—Disease as it affects Nations.

I wish now to present, though I fear in a similarly rude and slight manner, a fundamental conception of disease as it affects nations.

There is a disease called Leprosy which was very prevalent in this country. I have not yet had an opportunity of ascertaining whether the information I have received is correct, that there is a case in Plymouth at this moment. But, at all events, leprosy may be practically considered as having died out from our nation. In that circumstance we note one important fact connected with disease, that it may first infect and then leave a country. What is Leprosy? A dreadful affliction that harassed the human race 3,000 years ago, and that has persistently maintained its footing in many parts of the world until now. It called forth the most stringent sanitary regulations when Moses lived, if not indeed before his time, regulations that were conceived sometimes in a right, and at other times in a wrong interpretation of the nature of the malady. The disease is one

which, if not uniformly fatal, is so frequently fatal that it may fairly be regarded as one of the gravest that can afflict man. It is one of the longest in its duration, and the most painful and horrible in its character ; it destroys its victim piecemeal, and altogether produces effects so revolting that it would ill become me to describe it in a mixed assembly. Here, then, we have an affection enduring for several thousand years, capable of taking root and fixing itself in very different climates and dissimilar races ; permanently in some, temporarily in others ; still haunting, besides Norway, parts of India, Ceylon, Egypt, Arabia, Turkey, Greece, France, Spain, West Indies, and Norwegians in North America. Through the kindness of the eminent Dr. Danielson, of Bergen, and of Dr. Hirsch, of Trondhjem, it was my good fortune to utilize a portion of a brief holiday in examining, on a large scale, this disease as it exists in Norway. What is it that a wise Government does for the health of a country which is the victim of such an affection? The Government of Norway sets to work the most skilled physicians it can find, and instructs and enables them to investigate the disease by every available means, whether by the hospital, laboratory, or microscope, in order,

if possible, to ascertain the causes of leprosy; and then, secondly, to devise the best means of preventing and eradicating the disease. The study of this disease does not end here; our own Government has not been altogether idle. Some years ago, Governor Walker wrote to the late Duke of Newcastle, informing him that leprosy was on the increase in the West India Islands. The Duke sent to the English College of Physicians a request that they would investigate the matter, so far as our colonies were concerned. The college in due time placed in the hands of the Minister of the day, a report from 250 persons living in different parts of the globe, accompanied by an elaborate commentary of their own, in which they set forth the supposed causes as well as the real character of the disease. They also referred to the labours of Dr. Danielson, in Norway, which I have just mentioned. The whole of this mass of information and research presented what I must call a monument of sagacious investigation. It is just such monuments, small as well as great, that we want, in order to shew what, by united means of research and inquiry, can be done on all points, not for ourselves only, but for the whole human race. In the face of such labours, it is surprising to come across sensational articles complain-

ing how little is done. For my part, I confess it was an affecting thing for me to hold in my hand, during my stay in Norway, portraits of poor creatures suffering from leprosy, prepared by command of the Norwegian Government twenty years ago, and to be able to compare them with what the sun photographed last year in the villages of Ceylon. More than one of the most terrible of these tropical photographs might have been taken from a patient whom I saw in the northern capital.

I must venture to sketch a still more extended illustration of disease as affecting nations.

Cholera offers to the minds of all men, disease in the most aggravated form, and is the highest example that can be taken for the study of disease in relation to Comparative National Health. Were I to attempt to state the nature or relate the history of this disease, first of all my memory might fail me, and besides you would have to wait until nightfall before I could conclude the discourse. Not therefore to detain you long, I will take my text from an article which lately appeared in the *Times*. We had learnt by telegram that there had been an outbreak of cholera in the military station of Mean-Meer. Let us see what lessons we can draw from it. Only one regiment of our troops was attacked

by this fell enemy. But there had been previous outbreaks. In 1856 the ratio of deaths per 10,000 of strength was not less than 1,664 persons; while in the second outbreak, which occurred in 1861, the ratio of deaths per 10,000 was 2,456. We must not fail to bear in mind that cholera, unlike leprosy, has the remarkable faculty of appearing in many and widely-separated places almost at the same time. This circumstance always adds special horror to this terrible disease, for not only do men sympathize with those newly affected, but they fearfully begin to look closely to themselves. Thus when the cholera lately reappeared at Mean-Meer, near Lahore, in a few days the *Times* discusses the past history of the station, and shews, that like most of the stations in India before the visitation of cholera, Mean-Meer was the abode of filth. After the visitation, surface cleanliness had been so carefully attended to, that both air and soil were held to be acquitted of all share in any future outbreak of the disease. You will further find that Dr. De Renzy, the able commissioner who wrote on the subject at the time, says, that the facts as stated in the report leave no doubt that there were abundant facilities for the propagation of cholera through the drinking water. Then he

goes on to say, "There are still some grave defects in the water supply, but I hope they will shortly be removed; and even as matters now stand, the repetition of the circumstances of the past few days is impossible." But notwithstanding this prediction from a most competent writer, the disease in a few years reappears. Now, what lesson do we draw from this? It is that we may institute good sanitary regulations, and that they may yet fail in their intended effect. The regulations may be originated, but they may not be steadily maintained. The wells may be made pure, and they may be allowed again from want of care to become impure. In dealing with national health, not only is the highest skill required to track out the causes of disease, but an all-pervading machinery has to carry on without break, well-devised regulations.

It may be as well to give the exact words of Dr. De Renzy on the subject:—

"The localization of the disease being unaccountable on the air theory of propagation, I made a careful examination of the water supply of the station, in order to ascertain whether it furnished an explanation of the extraordinary virulence of the epidemics, and of the remarkable limitation they often exhibited. Up to the close of 1867 the troops obtained their water from wells. Cesspit latrines, containing the

fæcal accumulations of eleven years, were in dangerous proximity to the wells until 1861, when they were cleaned out and filled up. In other respects, the water-supply arrangements have continued unchanged through the four epidemics. Attached to most of the wells there is a masonry reservoir, about eight feet square and four feet deep. These reservoirs were intended to hold a supply of water ready raised and available for immediate use. The reservoir was covered in with wooden planks laid loosely over it, with spaces of half-an-inch or more between them. Some of the covering planks had been removed from the reservoirs that I examined, leaving a space of a foot or two wide uncovered. I saw a good deal of dirt of different sorts in the reservoirs, and there was a good deal of dirt also on the planks covering the reservoirs, the dung of the bullocks that worked the Persian wheel, &c. Wells are favourite places of rendezvous among natives, and the planks covering the reservoirs would afford a comfortable seat[b]."

"Now surface cleanliness was so carefully attended to at Mean-Meer that both the air and the soil must be acquitted of all share in the production of those diseases. I visited several privies, and found them models of cleanliness; all excrement, liquid and soil, is carted away out of the station. We are driven then to conclude, that the diseases were chiefly caused by excrement-tainted water[c]."

"The facts stated, leave no doubt that there were

[b] De Renzy, "Report on the Sanitary Administration of the Punjab for 1868," p. 15. [c] Ibid., p. 16.

abundant facilities at Mean-Meer for the propagation of cholera through the drinking water, that by the closure of the cesspools those facilities were greatly lessened, and that by the disuse of the wells and their attached open reservoirs, those facilities have been almost altogether removed. There are still some grave defects in the water supply of the station, which it is to be hoped will shortly be removed; but even as matters now are, a repetition of the terrible epidemics of past days is impossible. I speak of the European Infantry only. I did not inquire into the arrangements of the rest of the troops[d]."

A few days after the article in the *Times* had appeared, Mr. Clark, the able engineer of Calcutta, wrote to point out the simple but all-efficient remedy for the impurity of the water supply, under the circumstances of many Indian cantonments. The water-tanks were under ground, and therefore became the place of resort on which the natives are wont to sit, and thus to contaminate the water.

"There are," Mr. Clark writes, "simple means by which in almost any locality a pure supply of water may be easily secured at a comparatively moderate expense. Taking, for instance, a cantonment situate on a level plain in Bengal, and at present dependent on wells or tanks (ponds) for its supply, in such

[d] De Renzy, "Report on the Sanitary Administration of the Punjab for 1868," p. 17.

a case, my proposal is to conduct all the rain-water falling on the roofs of buildings, and conduct it by down spouts and underground pipes capable of bearing a little pressure, to a masonry reservoir, constructed at any convenient place and distance, above the surface of the ground, but at a somewhat lower elevation than the roofs from which the water is collected. The reservoirs should be covered and carefully protected from all contamination and interference. It may be made in most cases to contain a depth of ten feet of water, and the pipes which carry the rain-water from the buildings to the reservoir, would carry it back again from the reservoir to the buildings. Stop-cocks inserted into the down spouts would admit of its being drawn off as required."

These observations as to India have their bearing on our own country. In villages, in hamlets, and in detached cottages lying low on clay districts, the drinking-water is now almost of necessity surface-water, and of almost equal necessity contaminated. The remedy in many of these cases is by storing of rain-water. But it must be *properly* stored, as the comments of Mr. Clark on the case of Mean-Meer prove. A careful method of storing rain-water for drinking has been adopted already in several parts of England with excellent results. It demands the serious at-

tention of those interested in our rural population [e].

This is an instance of how, by watching the nature and progress of remote difficulties, we may sometimes reach the solution of problems which press, though in an altogether different manner, in our own country. It is impossible for me on this occasion to refer to all the Health Reports before me; but to complete the picture of the labours which our own country has been bestowing on this subject, I presume, even in the presence of Lord Napier and Ettrick, an eminent statesman, and lately governor of one of our Indian Presidencies, to draw your attention to some documents which give examples of the way in which cholera has been studied under the wise administration of India. The disease is being followed into every corner of this vast territory, comprising more than 200,000,000 of inhabitants. The chief sanitary commissioner, Dr. Cunningham, is devoting his great powers to the collecting what a scientific association knows how to appreciate —*facts*. Among other things, the Government

[e] I am glad to make these remarks in continuation of my paper of last year, on the unnecessary contamination of pure streams of running water near hamlets and cottages, published in the "Transactions" of this Association, 1871.

of India has published valuable microscopic investigations connected with the disease. The manner in which the disease is supposed to be limited is illustrated by numerous maps, shewing the district from whence, like a ghastly aurora borealis, it shoots out here and there, traversing this district and that. This erratic course has at various times been attributed by some to general meteorological influences, by others to the variations of ozone, by some to altitude, by some to diffusion by persons, by some only to the contamination of water by a specific cholera poison engendered in the human frame, by some to the water level. We have, at all events, entered upon the path of exhaustive investigation. Quite lately an interesting document, of only a few pages, has been prepared by Mr. Radcliffe, under the instruction of Mr. Simon, tracing the mode of migration of the disease. He says that hitherto we have been able to say pretty well whether cholera would come to Europe by seaboard or by caravan routes; but as we are now opening new lines of railway communication through central Asia and Russia, and thence across Europe, he properly asks what, under the new and altered circumstances, will be the course of the disease, and what our new duties?

Before wholly dismissing this subject, I may presume to quote to you two or three general conclusions arrived at by Dr. Cunningham; but before I do so, I beg you will bear in mind that they are the conclusions of a man who has had, and used, opportunities on a scale unknown in this country. He asserts that with the present imperfect data it is premature to decide conclusively in favour of any one theory regarding the spread of cholera, and adds, that the several existing theories may involve partial truths, which would only become incompatible with one another when insisted on as absolute and entire explanations. This is the language of a philosophical writer. In effect he says: "I will labour on with all the means at my disposal, with all the powers I have, and with all the skill of modern science, and not be ashamed to say at the end, that although I may think this or that probable, yet I decline to dogmatize until I have been enabled to master the whole question." He observes, moreover, that in order that a sanitary commissioner may properly discharge his important duties, it is of the first importance that he should keep his mind perfectly unbiassed by theories; that his great aim should be to collect facts, and from these facts, by a process of strictly logical induction, to draw the

conclusions which may be warranted by them, his judgment being altogether unfettered by the opinions which have been expressed even by the highest authorities. It is obvious that India presents a field for the study of cholera and other diseases, such as can be found nowhere else; and the evidence which is from year to year available in each province, if carefully collected, will afford an ample field for scientific men. A true and scientific man is always hopeful; is ever ready to pursue a work to the end of his life, without attained reward, and to help younger men in collecting facts, and drawing safe and sound conclusions, though he himself may never live to know them.

That these remarks are justified by me, the following passages will prove :—

"It will thus, I trust, be seen that every measure which can be adopted to obtain reliable information regarding cholera in India, and to throw light upon the disease, is now being taken. With the registration of deaths among the people, which, although still far from accurate, yet already supplies general truths of no mean value; with monthly statements received from all parts of India, shewing the current history of the disease; with the registers of cases made in all civil and military hospitals; with the special local inquiry which is about to be instituted in the Central Provinces; with the more scientific portion of the in-

vestigation patiently and carefully conducted by Drs. Lewis and Cunningham, it is to be hoped that in time much valuable information may be obtained. And even if all these efforts should in the end unhappily fail, and leave us as ignorant as ever of the laws which govern both the origin and distribution of the disease, it will be some ground of satisfaction that at all events an attempt had been made to study cholera in India on something like a scientific basis. And not only are facts now being widely collected, they will also be examined altogether apart from all preconceived theories[f]."

"In short, observations are of no value unless they furnish indications as to the condition of that layer of soil in any locality in which accumulation of organic matter and changes in moisture occur, and observations on water-level in wells are only useful when they furnish such indications. It has been urged, as an objection to the soil theory, 'that it hardly helps us on very far;' but surely a theory, however open to objection it may be on this ground, if it be consistent with facts, is more valuable and more likely to prove of practical benefit than theories of the greatest definiteness and clearness, which are not consistent with the facts. It may well be doubted whether any of the theories which have been advanced with regard to cholera is consistent with, and capable of explaining, all the facts as to the origin and spread of the disease; but unfortunately

[f] "Seventh Annual Report of the Sanitary Commissioner with the Government of India, 1870," p. 76.

each theorist is apt to imagine that his own peculiar views represent not merely a certain amount of truth, but the whole truth.

"Until the number of accurate observations and facts, as distinguished from mere impressions, is very much larger than it is at present, it is only with the very greatest reservation that any one theory can be accepted. What is required in the meantime is the careful collection of facts, a comparison of these with one another, and a patient investigation of their adaptability to the various current theories [g]."

"As general conclusions of these inquiries into the soil theory, as applicable to the phenomena of cholera in the south of India, I would state—

"1st. That with the present extremely imperfect data, it is quite premature to decide exclusively in favour of any one theory regarding the localization of cholera.

"2nd. That several of the existing theories may really involve partial truths, and that they only become incompatible with one another when insisted on as absolute and entire explanations [h]."

And Dr. Bryden writes :—

"The history of cholera in India tells that there was a time when this miasm was insignificant even in the country of its birth. It is needless to speculate as to whether cholera is a thing capable of being created, or whether it was created before or after the appearance of man. It is sufficient to know that it

[g] "Seventh Annual Report of the Sanitary Commissioner with the Government of India, 1870," p. 148. [h] Ibid., p. 181.

has a natural history of its own, and that its place in nature is as fixed as that of any other existing species. That there have been, previous to the modern period of fifty years during which, in a continual succession of invading epidemics, the miasm has displayed vigour and vitality, similar epidemic periods extending back to the remotest antiquity, even the imperfect data which exist enable us to infer. The history of our period shews that cholera, which has once made its exit from the endemic basin in strength, plays a definite part, and may make the circuit of the globe before it finally decays. When, therefore, history has failed to record invasion, the inference is, that in the endemic soil the germ had for the time gone to decay, or survived in so debilitated a state as to throw off no swarm of sufficient strength to leave its impress on the population of the epidemic area. From what we know of the behaviour of the miasm in the endemic basin in every year, it would probably be found true did the grounds for forming a conclusion exist, that the epochal manifestations of epidemic cholera, and the intervals of decadence, have been caused by the geological changes connected with the rise and fall of the water level in the great tract between the Cuttack hills and the hills east of Bhurmpooter. Be this as it may, I fear we must come to the conclusion, that at present we are in the midst of an epoch, in which not only are the different epidemics of extremely rapid recurrence, but in which each succeeding epidemic surpasses the other in the virulence of its effect on the human constitution[1]."

[1] Bryden, "Report on the Cholera of 1866-68," p. 233.

"I regard it as of extreme importance for the application of a suitable remedy, that not only should the direction in which the statistical data point, be clearly indicated, but also that the radical difference between the condition of the European and the native—natural, domestic, and moral—should be weighed in estimating the causes, determining the disparity of the ratio of attack, in order that we may not be led into error in miscalculating the effects of the prophylactic or remedial measures employed. The fact of disparity stands plain and unmistakable. Some will apportion differently the effects of different conditions; and my estimate may be in some respects inadequate, and in others exaggerated. Under any circumstances, the question demands the deepest study that the sanitary officer can give. Before leaving it, I wish to remark once more that the great truth is not to be passed over as a curious statistical fact, but that its teaching is to be weighed, holding that its value is that of a law and true for all time to come, and that in the study of this law we have the truest groundwork for the application of a remedy to what has come to be a great national misfortune.

"In this shape I am compelled to leave the subject. There are many difficulties which I have not solved; and I have been able to give an answer only in general terms to the all-important question—How the life of the British soldier in the cantonments of Upper India may be saved? I have tried to remove the whole question out of the province of conjecture and of misrepresentation of facts and their bearings, and from the facts as they are here systematically

placed, it is open to all to endeavour to push on the inquiry to a solution of the problem. And to him who shall have demonstrated the sanitary conditions under which the mortality of the British soldier is capable of being assimilated to that of the Hindostanee, will be due the credit of having saved in the future a fourth of all lives that are now lost on Indian service [k]."

These weighty paragraphs will shew to all thinking persons the magnitude of the question concerned in the subject of Comparative National Health. I must yet add one passage from the admirable volumes of the able Commissioner of the Central Provinces, Dr. Townshend, to remind you how our great epidemic oftentimes stands related to another generally different.

"It has been remarked that the degree of violence with which cholera attacks different districts varies according to local conditions. The same may be said of small-pox; and that the conditions which favour the prevalence of one disease also aggravate the mortality from the other, is apparent from the rates of mortality from cholera in the several districts of the two divisions in which both epidemics raged almost simultaneously in 1869.

"We require statistics extending over a longer period of time, and a more accurate knowledge of the

[k] Bryden, "Report on the Cholera of 1866-68," p. 232.

climatic and local conditions of different localities before we can explain all the points of difference in the conduct of these destructive epidemics; but I trust it will be allowed that I have given sufficient reason for my belief that the fact of small-pox and cholera having raged almost simultaneously over a large part of this Province in 1869, and that in 1870 both diseases were almost equally quiescent over the same tract of country, must be taken as strongly corroborative evidence that these two contagia in their progress and decline are subject to the same general laws. It appears to me that in an inquiry into the nature of cholera, the question how far it is correlated with other contagious epidemics is one of great importance, and that facts bearing on it should receive careful consideration. I believe that much advantage will be derived from studying small-pox simultaneously with cholera, and that by carefully observing the conditions under which the seasons of epidemic activity of these two contagia recur, much light will be thrown on the laws that govern the spread of epidemic diseases[1]."

This, then, is my further illustration of the idea comprised in the study of Comparative National Health. I grieve to pass lightly over a subject illustrated by so many great observers, from Gull, Baly, and Snow, to our Privy-Coun-

[1] Dr. Townshend, "Report of Sanitary Commissioner of the Central Province of India for 1871," p. 32.

cil Health-Staff, Pettenkofer, and many others. But it is inevitable. So we return to our first question, What is health? I then ask generally, How is it to be maintained in the Individual, in the Nation, in the World? We have to investigate the circumstances and the conditions of the individual, of the nation, and of the world. We have to ask whether we really understand the most simple and fundamental propositions concerning Air, Water, and Food; whether we are not in danger of thinking some things healthy which are unhealthy; and whether we are not trifling sometimes by declaring things to be unhealthy, which all common sense shews to be within the region of good health; whether we are not sometimes in danger, even in sanitary inquiries and laws, of imposing, or endeavouring to impose, upon all people the same laws for their mode of life and the maintenance of their health as though these laws were inviolable and absolute, when we know that both by climate and by inheritance, and a multitude of other circumstances, men vary in their bodies as they vary in their minds, and that there is no one type into which they can be forced, either by education or sanitation. These are illustrations, on which it will be well for all to ponder, who undertake either to legislate or

to administer the laws which the Legislature makes for us.

Health depends, it is true, on but few elements. Yet the full understanding of the essential in the combination of these elements is calculated still to tax the highest powers of observation and of reasoning.

IV.—Tabulation of Comparative National Health.

Many years ago, Dr. Stark, of Edinburgh, drew a diagram[m] of death-rates in selected towns and countries in various parts of the globe, the population being taken indiscriminately without regard to age at death. In New Zealand the mortality was then represented to be as low as 12 per 1000 per annum ; in Norway, 20 per 1000 ; in Prussia, above 29 ; in Iceland, 40. It was said to rise in various countries until it reaches the enormous proportion of nearly 700 per 10,000 on the Gambia. I cannot vouch for the accuracy of these figures ; indeed, they must not be taken as the actual rate, but they approximate to it as nearly as could be then ascertained. Accurate returns of births and an accurate census are of course necessary for determining

[m] See Johnstone's "Physical Atlas," Plate of Geographical Distribution of Disease.

the mortality of the populations of the various countries of the world. Gradually we approximate this. Through the labour of the Registrar-General's office, and the untiring energy of Dr. Farr, we are enabled to see every week on our breakfast-table the barometer of comparative national health, in respect, not only within Great Britain, of our great towns, but of Turin, Berlin, Vienna, St. Petersburg, New York, Calcutta, Bombay. These notices, as an index of the astonishing progress towards the formation of one human brotherhood, in respect of its material condition, deserve the utmost attention.

It is to be desired that they could be printed diagramatically in our newspapers, in some such form as is shewn on the first page, so that at a glance each place might take its relative position of enviable salubrity or unenviable mortality in the previous week.

V.—Health Administration in England.

Thus far I have endeavoured to sketch the idea of the subject-matter of sanitary science—Personal Health, Public Health, National Health, Comparative National Health. The question remains, What are poor mortals to do among so many pitfalls? So far as England is concerned, our Government has just said: "You

may trust the general guidance of a Central Office, combined with the local management by town councils, guardians, and their officers." I believe the Government is right.

In saying this, I know I am putting myself in opposition to some in this Congress whom I much respect; but I say it because I believe the conclusion is founded on a fundamental principle of modern civilization, and is suited to the future course of our nation. The principle to which I refer furnishes the answer to the question, Who are to manage this country in the future, despots or the people? Are you going to make this people take care of themselves, or are you going to treat them like children, after the type of the most feudal times? Do not misunderstand me. I am a believer in feudal management for feudal times, but not for this time. I believe in a certain "paternal government" for all times. Mr. Vernon Harcourt was pleased the other day to satirize sanitarians and philanthropists as men so addicted to meddle with other people's affairs, that if they had their way, they would, on the supposed outbreak of an epidemic catarrh, order from Moses and Co. the form of flannel nightcap for old women to go to bed in. I publicly answer here that I most unquestionably would

do so if I thought that particular mode of meddling right. The question as to particular measures of State policy is whether a thing, apparently desirable, is expedient and right, or inexpedient and wrong. The instance given by Mr. Harcourt was only appropriate for his purpose of casting temporary ridicule upon a sound principle of government. What is the true principle of sanitary legislation? It is that the Government should help the people to do, not what they can do, but what they cannot. It should strive to ascertain what hindrances there are in the way of the people's health, and to remove those they cannot remove for themselves. If they like to live in dirty cottages, let them, so long as thereby they do not infect their neighbours. But let it not be impossible for them to have clean ones. Whatever your fundamental laws may be, they must not sanction arrangements by which men cannot have pure air, nor pure water, nor unadulterated food. The laws should aim at securing to all whatever is *necessary to health.* As persons occasionally make comments upon sanitarians, I do not see why I should not return the compliment, and make this observation upon the remarks of some of our legislators, that they are not always distinguished

by a correct appreciation of the proper objects of legislation. I maintain, that it is not the minuteness of a point which should place it beyond the purview of the Legislature, but its inapplicability. There is nothing too minute for the attention of the Legislature, provided this minute point be essential. Legislation upon sanitary matters should proceed upon this principle.

At the same time, fundamental sanitary legislation must not be hampered by details, or it will certainly be thwarted by a combination of objectors. Mr. Göschen, in the course of last year, introduced a measure dealing with sanitary matters. It was weighted by the enormous question of local taxation, and the Bill in consequence was withdrawn. Mr. Stansfeld, with a rare union of sagacity and moderation, introduced on a single sheet his Act of 1871, by which this principle has been established, that the care of the national health should be in the hands of a first-class Cabinet Minister, having within his office all the elements necessary for its complete supervision. He was stigmatized as taking a narrow view of his duty, and taunted with the smallness of his Bill. It was actually read a third time without the fact being noticed in some of the daily journals.

This is perhaps not so singular as that Parliament, almost without discussion, accepted so considerable a measure.

For, when we grapple with details, there is not one of the following list which can be properly excluded from the supervision of the Office: — 1. Water supply. 2. Removal of refuse. 3. Control of buildings (new and old). 4. Sewage. 5. Drainage. 6. Prevention of overcrowding. 7. Prevention of contagious and infectious diseases. 8. Prevention of epidemics. 9. Formation of sanitary areas. 10. Registration of causes of death. 11. Registration of sickness, as distinguished from death. 12. The laws of quarantine. 13. The superintendence of epizootic epidemics. 14. The inspection of all hospitals, including those of the insane. 15. The sanitary inspection of penitentiaries and prisons. 16. The inspection of dispensaries. 17. The inspection of druggists' establishments. 18. The inspection of factories. 19. The inspection of the dwellings of agricultural labourers. 20. The placing of every district within reach of sanitary inspection by the best engineering, scientific, and medical experts. 21. Education and registration of medical practitioners. 22. Education and registration of national health experts. 23. Edu-

cation and registration of nurses and midwives. 24. Control of intoxicating liquors. 25. Mode of obtaining analysis of air, food, water, &c. 26. Vaccination. 27. Coroners. 28. Vested rights of millowners and others to interfere with sanitary measures in new populations. 29. Organization of charities. Not one of these twenty-nine matters, each of which forms a department in itself, can be removed from the subject of National Health. Indeed, I may say the list is not intended to be exhaustive ; nor is there time to discuss any one in detail. But, take one instance. Workhouses now contain good hospitals ; these being supported by the rates are virtually local State hospitals. Do you propose to have them brought up to the level of modern hospitals by inspection ? If so, do you exempt the adjoining county hospital because it is supported by voluntary subscription ? Or again, some may wonder that at the end of the list "organization of charities" is put down as an object for the local government office. But I hold with most thinkers on the subject, that a common understanding between State authorities and voluntary societies, for relief of destitution and sickness, is becoming an absolute necessity. The country will soon be unable to afford the waste of effort and substance

which want of understanding engenders. Instead of leaving local committees to squabble over the question as to whether particular persons are eligible for relief at the hands of the hospital, or whether they should receive such relief at the hands of the Poor-Law, I hold that there must be a combination of the powers of the State and of individuals, resulting in concerted action between them ; and unless there is some such concert we shall inevitably before many years come to a dead lock. That is my answer to the sharp criticism that we sometimes hear, as to the impropriety of collecting in one central office what is called the care of destitution and the care of health. I say that the two subjects are inseparable ; and that in the present state of civilization it is necessary that in some form or other these two great departments should be united.

Now, I must proceed very rapidly to say, that I think the Act of 1872, which threw the administration of this vast subject into the hands of every board of guardians and every town council, and which divided the country into urban and rural districts, was conceived with great judgment. And here I must call the serious attention of the members of the Congress to what I am about to state. In adopt-

ing that plan, it appears to me that both the Royal Sanitary Commission under Sir Charles Adderley, and the Government of Mr. Gladstone proceeded on a wise principle; instead of waiting till they could carry a complete theoretical scheme, they at once availed themselves of the existing institutions and habits of the country. In seeking aid from the local self-government of the country for the administration of this intricate department, they followed the lead which has made England what she is, with her faults, for unquestionably faults exist, and with her virtues, which are unquestionably great. Mr. Gladstone relied on that which has rendered the people self-reliant and capable; not doubting the good sense of his countrymen, he said: "Parliament believes you will discharge your new duties when you understand them, and does not hand you over wholly to so-called scientific experts, who, with the alterations of ever-advancing science, are too apt to believe that a modern scientific notion, being the newest, was also the greatest and the truest." These Acts are dealing with a practical people; practical men have been foremost in our discoveries; and I have yet to learn that simple and practical men, living among an educated and cultivated people

in a period of unexampled scientific progress—I have yet to learn that such men, when certain duties are assigned to them, will fail to act up to their characters as Englishmen. There is, however, one thing which must be done, or I for one should wish to see the Act repealed. It is absolutely necessary that there should be attached to the office what are called scientific experts. For this purpose, in addition to an adequate staff of permanent officers, qualified for the joint duties of supervising all subjects connected with the laws of destitution and health, the country must be able to command the highest scientific skill; and how is this to be obtained by the Government for the solution of sanitary questions? This must be done, not by attaching to the office a numerous body of men appointed for life, but a body of persons retained for reference or consultation on particular subjects, and paid fees for their opinions, when their opinions are required. In this way at any moment the Government may have the opinions of the leading men in science of the day, and any questions asked of such men would be so answered by them, that the courts of law, boards of guardians, town councils, and authorities in any part of the land would, in time, listen to those opinions with respect. This they never

would do to analyses and opinions furnished by men who had not been specially trained for such work, and were not devoted to it. It is to be remembered that a wealthy tradesman, for instance, charged with selling adulterated food, would probably seek for eminent witnesses to reverse the decision of a local analyst or ordinary medical practitioner. All such judicial sentences should rest on evidence, which men like Frankland or Odling would corroborate and not shake. If this course is not pursued, I foresee endless dispute and litigation. I viewed with consternation the clause in the Bill laying down the standard of purity which was to be demanded of rivers and water supplies. And my reason was this, that if the clause had been retained, the Bill would unquestionably be thrown over. When, however, the clause was withdrawn, writers, whose criticisms I read with attention, taunted Mr. Stansfeld with throwing over the most important parts of the Bill. Important no doubt they were, if they could be carried and sustained, but wholly unimportant as compared with carrying legislation of such fundamental character that it need not be reversed. Whatever steps we take must be certain. By the recent Acts we have authorities in every portion of the country; and what is more,

we have a central authority, which has obtained the power of employing and paying any number of experts that are required for whatever purpose, and which the Treasury will sanction. I have carefully refrained from asking questions of, or having any communication with, members of the Government, so that I must not be thought in any sense to speak with authority on this subject; but as I understand the Legislature and these Acts, I entertain not the slightest doubt that the Acts have conferred on our central authority the further power of making, with the consent of the localities, such combined districts as practice, experience, wise energy, and the good intentions of the people see in their several neighbourhoods to be desirable. But it is manifest to all who reflect on the subject that the alteration of boundaries and areas is a difficult thing: that it involves various kinds of local interests affecting property, party, and sentiment; such as county, union, parish, and franchise questions, together with personal relations of all the officers severally engaged in these respective divisions; so that a great amount of labour must necessarily be undergone to settle the hundreds, or, more probably, the thousands of questions which will demand the personal attention and judgment of the Local Government

Board. With regard to future legislation, I earnestly hope there will be no Public Health Bill next Session ; but I no less earnestly desire that the attention of the Government should be given to the subject of local taxation, for this must be settled before anything like finality will be arrived at with regard to the financial questions connected with the public health, or the payment of a new class of sanitary officers. Both central and local experience will be gained by a little timely delay. I grieve to say that utterances of impatience, and even of desire to repeal the Acts of 1871 and 1872, have been already heard. I do not know whether those who are anxious to effect another alteration in this matter have reflected on two circumstances —the magnitude of the work which has been undertaken by the Local Government Board, and the fact that even our public officers are mortal. The work of the Board is becoming very heavy, and I sometimes look with uneasiness at the share I have taken in urging the Government to construct an office which has to regulate, or reconstruct, and to administer the more than thirty subjects which I have before enumerated.

I would therefore urge this Association loyally to support the authorities, central and local ;

to look for the fruit of the existing law; and to wait until the local authorities throughout the country have had an opportunity of maturing their plans. After delaying a few months, thus occupied, I presume that the parties of the House of Commons will once more combine, in order to produce a permanent sanitary code, and not a mere consolidation. For my part, I prefer a complete sanitary code to mere consolidation. The latter might be prepared by an ordinary draughtsman. Any skilful lawyer can consolidate Acts of Parliament. The difficulty is, to find out what are the powers permanently required; what it would be reasonable, what useless to exercise, what should be expunged; what, in short, should be the national sanitary code. I appeal to all persons connected with any public work whether it is possible to complete an undertaking of that kind in haste, or under feeling of doubt whether your conclusions will be allowed a fair trial.

VI.—Conclusion.

And now, my Lord, I must thank you and the Association for the kindness with which you have received my remarks. I will in conclusion only say, that there are two dangers which all of us are liable to fall into, and which, therefore,

I would distinctly point out. Some persons appear to think we are backward, wanting in patriotism, or even indifferent, if we do not insist on complete measures; and they declare they will not accept anything which has not the aroma of completeness about it. Well, I only hope they will exercise forbearance towards those who are in the difficult position of constructive legislators, and that they will gather confidence for future progress from past success. I delight in theoretical and complete schemes. They are important and instructive, and deserve the respectful and considerate attention of all persons who are engaged with the practical work of the State. But to wait for completeness is very often simply to defer, from year to year, the doing of that which might have been done to-day. In most respects this country is in a progressive state, though the fundamental principles which lie at the root of all our institutions are not only being severely criticised, but will be considerably modified, if not in our time, at any rate in the time of our children.

We may congratulate ourselves in this Association upon the sagacity of Mr. Hastings in promoting for so many years, with so much success, entirely free discussions on social sub-

jects at these Congresses. I believe it is through associations of this kind that we shall get complete views of many subjects worked out, and presented to the public and to Parliament. There is a class of persons—I am happy to say rapidly diminishing in number—who seem to be of opinion that we who are engaged in sanitary work are somewhat fanatical, and that because it is connected with our material frame, it is therefore a second-rate subject, fit only for inferior men. With them I entirely differ. Bred a physiologist and a physician, I am not in the least afraid of being called a materialist. I believe that we are now able to look at things fairly in the face. I believe that by our health, by our inheritance, by our climate, by our lives, by our characters, we become what we are. I believe that the human body is the instrument through whose agency alone, in this wonderful world of ours, the mind can do its work. I believe that mental education is the blessing of modern life, if wisely directed, to the end of making good men and useful citizens. I believe that the body, when overtasked and exhausted, brings destruction to the best qualities of the mind. If I can read anything in the history of the globe, it is this, that the great qualities of a people depend in large

measure (except in rare instances) upon the *physique* of the nation. I appeal to historians —to all, that is, who have studied the philosophy of history—whether it is not the fact that some of the highest of human qualities have been shewn in a most eminent degree in days when there was a noble *physique*, but when there was no systematic education according to the modern notion of book-learning. If you overtask men, especially at book-work, you make them irritable and nervous: you may shorten their lives, as in our days we have seen great and good men's lives shortened because of the overweight that has pressed upon the tenderness of a sensitive conscience. You bow down a man, who, if you but gave him more time, would have worked long and well in his useful station. I could mention more than one rare spirit who would have been working for the nation to-day if this had not been so with him. So far as the comparative national health is concerned, I say there is no possibility of exaggerating the importance, not to our own country alone, but to the world, of fostering and caring for the body of man. The body of man is not only the casket which contains the soul. It is more. It is a casket which, under certain conditions, moulds and modifies

the soul. The casket may even be injured by the vices and follies of parents—by parents who transmit to their children accursed and accursing diseases. You may ruin a nation in the same way by helping it to rush into too exciting commercial speculations in pursuit of wealth; you may weigh down your best men by harassing, useless details; you may wear out your public men in senseless midnight discussions with no worthy object, and without result. You may ruin a nation from the highest to the lowest, through want of patience, through lack of care, through want of quietness. Believe one who has passed middle life not without some poor endeavours to promote mental and physical vigour among the people: believe him when he says, you may unconsciously press too hard upon the mental and bodily power of your people; you may, unawares, destroy that precious gift of God—that health which enables man to do the great work of man, his duty towards his fellow-creatures, his duty to himself, and his duty to his God.

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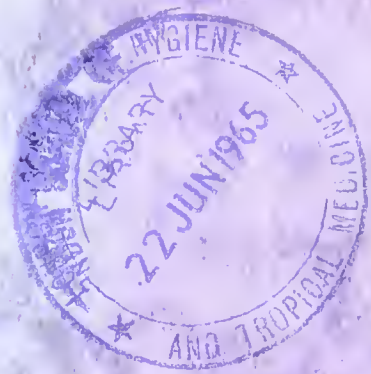
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